REMARKS

Claims 1-83 are pending. By this response, claim 1 is amended. Claims 4-7, 9-12, 14-17, 19-22, 24-27, 29-32, 34-47, 39-42, 44-47, 49-52, 54-57, 59-62, 64-67, and 69-83 are withdrawn from consideration. Reconsideration and allowance based on the above amendments and following remarks are respectfully requested.

Applicants appreciate the indication of claims 13, 18, 23, 28, 33, 38, 43, 48, 53, 58, 63 and 68 as containing allowable subject matter and would be allowed if rewritten into independent form to include all the limitations of the base and any intervening claims.

Prior Art Rejections

The Office Action rejects claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Acharya (US 6,366,694) in view of Higuchi (US 6,271,005) and claims 2-3 and 8 under 35 U.S.C. § 103(a) as being unpatentable over Acharya, Higuchi and Nishizawa, et al. (US 4,516,154). These rejections are respectfully traversed.

For reasons of brevity, Applicants remarks filed in the Response dated November 4, 2005 are hereby incorporated by reference.

In the Section titled "Response to Arguments", it is stated that claim 1 is written in the alternative such that the Examiner interprets the claim as containing only a first mode and has not considered the recitation of a second mode in determining the rejection of the claims in view of Acharya and Higuchi. Applicants respectfully submit that the alternative language in which the word "or" is used, does not refer to utilizing a first mode or a second mode. The alternative language refers to operations performed within the first mode in which interpolation is performed for pixel data positions of virtual pixels or positions of photosensitive cells. Further, the second use of the alternative language "or" refers to the generation of three primary color data which can be produced by mixing pixel data or by interpolating. The use of a first mode and a second mode is not alternatively recited. However, in order to remove any possible confusion or doubt, Applicants have amended the second instance of alternative language "or" near the

recitation of the "second mode" in independent claim 1. Applicants respectfully submit that a correct reading and interpretation of independent claim 1 includes both a first mode and a second mode. Applicants have reproduced part of claim 1 below in order to illustrate that the claim refers to both a first mode and a second mode and not a first mode or a second mode.

> a signal processing circuit for interpolating, in a first mode designated by said operation commanding circuit, pixel data in positions of said virtual pixels or positions of said photosensitive cells **and** generating three primary color data on the basis of a plurality of pixel data, which are produced by mixing pixel data, **and** interpolating, in a second mode designated by said operation commanding circuit.

Acharya teaches an integrated color interpolation and color space conversion apparatus. In Acharya, each pixel has only one color component from the red, green and blue color palate. An interpolation technique is used to obtain the other two colors for each pixel. See column 4 through column 5, lines 1-34. The position of each pixel is known and at least one color component of each pixel is also known. The interpolation used in Acharya only provides two other color components missing from each pixel.

In contrast, in embodiments of the present invention, a photosensitive cell is arranged such that virtual pixels can be derived from the arrangement of actual pixels. The position of the virtual pixel and the three primary colors of the image data are derived based on the pixel data itself. The position date is obtained in one mode and the three primary colors are obtained in a second mode.

Applicants respectfully submit that Acharya does not obtain position data for virtual pixels or photosensitive cells in a first mode and generate three primary color data in a second mode, as in the embodiment recited in independent claim 1. Thus, Acharya fails to teach or suggest, *inter alia*, a signal processing circuit for interpolating, in a first mode designated by said operation commanding circuit, pixel data in positions of said virtual pixels or positions of said photosensitive cells and generating three primary color data on the basis of a plurality of pixel data, which are produced by mixing pixel data, and interpolating, in a second mode designated by said operation commanding circuit, three primary color image data in the positions of said

virtual pixels on the basis of all pixel data sequentially read out of said photosensitive cells, generating three primary color pixel data at the positions of said photosensitive cells on the basis of said pixel data given to said virtual pixels, and broadening a frequency band of said three primary color image data, as recited in independent claim 1.

Further, Higuchi fails to remedy the deficiencies in Archarya's teachings. Higuchi teaches a solid state image sensor that includes a pixel area for receiving light in a black level area. The sensor shape is reduced in particular areas in order to optimize yield of the sensors on a chip and the sensitivity is increased in the effective pixel area in proportion to the decrease in the black area. See column 3, line 55 through column 4, line 56.

Higuchi, however, does not teach or suggest obtaining position data for virtual pixels or photosensitive cells in a first mode and generating three primary colors on the basis of a plurality of pixel data, which are produced by mixing pixel data, and interpolating, in a second mode, as recited above.

Furthermore, the Office Action asserts that Higuchi shows the electrodes arranged to "skirt round" the apertures in Fig. 1, the electrodes being denoted by boxes 16 formed of dotted lines. Applicants submit that such arrangement is made merely to avoid overlapping on the apertures, rather than pixel shifting. In contrast, the vertical transfer registers of the claimed invention are formed to meander round the apertures (pixels) along with the pixel shifting. Therefore, Higuchi fails to teach or suggest, *inter alia,* first transfer registers each formed meandering round the apertures of said photosensitive cells and sequentially transferring the signals input via said electrodes from said photosensitive cells in a vertical direction, recited in claim 1.

Therefore, the combination of Acharya and Higuchi fail to teach each and every feature of independent claim 1 as required. Therefore, claim 1 is distinguishable over the cited art for at least the above reasons. Dependent claims 2-3 and 8 are also distinguishable over the cited art for the reasons above as well as for the additional features they recite. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested .

CONCLUSION

For at least these reasons, it is respectfully submitted that claims 1-3 and 8 are distinguishable over the cited art. Favorable consideration and prompt allowance are earnestly solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicants respectfully petition for a one (1) month extension of time for filing a reply in connection with the present application, and the required fee of $120.00 is attached hereto.

If the Examiner has any questions concerning this application, the Examiner is requested to contact Chad J. Billings, Reg. No. 48,917 at the telephone number of (703) 205-8000.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Dated:

Respectfully submitted,

By _____

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